Gents,

I put together a simple prototype to illustrate the feasibility of a very small Linux KVM based hypervisor. At the end of this email you'll find a detailed break down on LOC per subsystem. Currently the prototype has 380KLOC;

Standard configuration mechanism has been used to 'trim down' the kernel code base. There is still room for improvement (275KLOC is a realistic goal).

Drivers are part of a privileged VM (Same has Xen) and are restartable by definition. Platform code, PCIe, Hotplug, Serial console are part of the Hypervisor therefore _not_ restartable. (See picture at the end)

*** Ultimately, LOC NOT restartable with Xen [ Xen + Dom0 minimal ] is going to be same OR greater than a minimal Linux KVM Hypervisor.

_BUT_

Going with a KVM based Hypervisor as _huge_ advantage:

- Major distribution vendor are using KVM therefore instead of reinventing the wheel we could just piggy back their work.

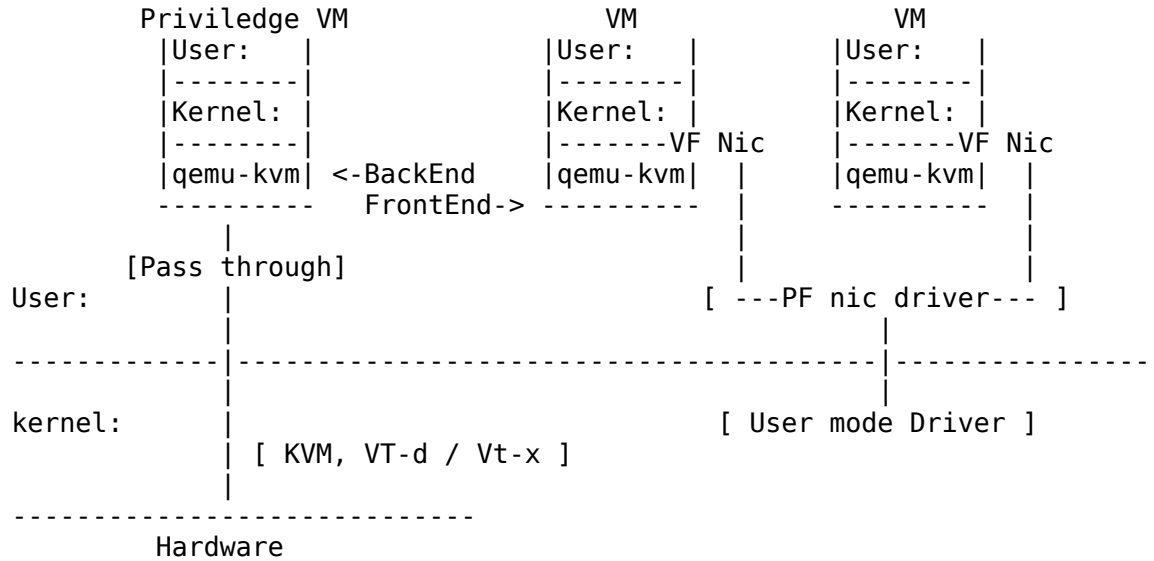
- KVM is a driver part of mainline Linux; It has ~20KLOC easy to understand. [Xen code based is complex, poorly documented and rely on Python script at runtime!]

- Huge regression test suites exist for Linux

- Xen has customized GDB, Kexec, Backtrace and so on; With KVM _everything_ is standard Linux

- User mode device driver can run directly on top of the Hypervisor without affecting it's stability. For example, things like PF NIC could be adapted to run in User mode.

******* Thin Hypervisor based on KVM *******



******* Lines of codes per subsystem *******

Platform Initialization
~~~~~~~~~~~~~~~~~~~~~~~
- Intel IO-APIC, CPU, ACPI, MMU,  TLB ---> 61829
- Bootstrap ---> 2545
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64374

Core Kernel
~~~~~~~~~~~
- Scheduler, Process, Interrupt, Timer, Locking, Signal ---> 89119
- Memory Management ---> 46106
- SysV IPC ---> 5623
- Block layer ---> 12924
- Device-Driver Model ---> 8765
- Virtual File System (VFS) ---> 48473
---
211010

File System
~~~~~~~~~~~
- EXT2 ---> 6612
- Code page ---> 1404
- Devpts ---> 578
- Procfs ---> 8767
- RamFS ---> 377
- SysFS ---> 3042
- EventFD ---> 2551
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23331

Virtualization Support
~~~~~~~~~~~~~~~~~~~~~~
- KVM Driver VT-d VT-x ---> 19915
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19915

Drivers
~~~~~~~
- Loopback, TTY ---> 16617
- Ramdisk ---> 2636
- Nvram, RTC ---> 3709
- PCI, PCIe, Hotplug ---> 16361
- Platform specific (Intel) ---> 3874
- User Mode device driver ---> 650
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43847

Library
~~~~~~~
Generic ---> 18612
Platform specific ---> 1451
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20063

TOTAL:

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382540